

REMARKS

Claims 1-6 were rejected under 35 U.S.C. § 102 or 103 as being unpatentable over Gungor. This rejection is traversed for the following reasons.

Claim 1 recites "a substrate having a first face and a second face, the second face being disposed parallel to the first face, the material of which said substrate is fabricated having anisotropic thermal conductivity with a first thermal conductivity value in a direction parallel to the faces and a second thermal conductivity value in a direction normal to the faces, the second thermal conductivity value being less than the first thermal conductivity value." As described in an exemplary embodiment shown in Applicants' Figure 1, the substrate 12 has higher thermal conductivity in the X and Y directions than in the Z direction. Thus, the conduits 14 improve the thermal conduction in the Z direction.

Gungor fails to teach or suggest the anisotropic thermal conductivity recited in claim 1. Gungor discloses using a hybrid metal based composite substrate carrier consisting of an aluminum matrix reinforced with other materials. Nowhere does Gungor teach or suggest that the carrier has anisotropic thermal conductivity. In fact, such metal based substrates (e.g., aluminum or copper) typically have isotropic thermal conductivity.

In response to Applicants' arguments, the Examiner provides two grounds for why Gungor teaches the elements of claim 1. First, the Examiner asserts that "Gungor teaches the base composite substrate is carbon composite, which meets the present invention. It would be inherent to have the anisotropic thermal conductivity property as claimed by the applicant." Applicants respectfully disagree. The substrate in Gungor is a hybrid metal based composite which Applicants understand has isotropic thermal conductivity (column 2, lines 60-65). In fact, the preferred material for the substrate carrier 10 identified in column 3, lines 22-30 is an aluminum- silicon carbide matrix having isotropic thermal conductivity. Thus, Gungor does not teach the same substrate composition as described and claimed by Applicants. Accordingly, the anisotropic feature is not inherent in Gungor.

Although the Examiner relies on inherency, a prior art patent may not be assumed to contain inherently a claim limitation of the patent in suit simply because the reference discloses the same structure, the U.S. Court of Appeals for the Federal Circuit ruled May

POU920010084US1
132-0004 IBM

13 (*Crown Operations Int'l Ltd. v. Solutia Inc.*, Fed. Cir., No. 01-1144, 5/13/02).

Inherency may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient. *Id.*

In the present case, the Examiner has provided no support for the reliance on inherency other than a broad statement that Gungor teaches a substrate carrier which comprises the same ingredients and similar structure as the Applicants' invention. This reasoning is inappropriate as a matter of law and fact. Thus, the Examiner's reliance on inherency is improper.

Further, the Examiner points out that there is no clear statement of thermal conductivities with the conduits embedded and that it is unclear whether the thermal conductivities between the first and second faces would change after the conduits were embedded. Applicants submit that the thermal conductivities of the combined substrate and conduits are not recited in the claims, nor is such a recitation required. The claims are considered definite and the lack of such a recitation does not transform Gungor into an anticipatory or obviating reference.

For the above reasons, claim 1 is patentable over Gungor. Claims 2-6 variously depend from claim 1 and are patentable for at least the reasons advanced with respect to claim 1.

Claims 7-14 were rejected under 35 U.S.C. § 103 as being unpatentable over Gungor in view of Eckblad. Eckblad was relied upon for allegedly disclosing an adhesive and thermal paste. Claims 7-14 recite features similar to those in claim 1. Eckblad fails to cure the deficiencies of Gungor described above with reference to claim 1. Thus, claims 7-14 are patentable for at least the reasons advanced with respect to claim 1.

In view of the foregoing remarks, Applicants submit that the above-identified application is now in condition for allowance. Early notification to this effect is respectfully requested.

If there are any charges due in connection with this response, please charge them to Deposit Account 09-0463 maintained by Applicants' Assignee.

Respectfully submitted,

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POU920010084US1
132-0004 IHM

4